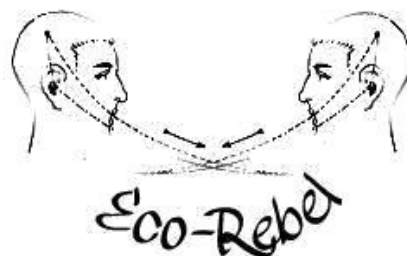


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LINGUISTICS AT THE END OF THE BACONIAN AGE, OR: FIVE ESSENTIALS OF ECOLINGUISTICS - A SKEPTICAL INTERIM ASSESSMENT

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Resumo: A ecolinguística atual é polifônica, mas, apesar disso, há cinco pontos essenciais compartilhados por muitos pesquisadores que eu acho que estão errados. Minha opinião é a seguinte:

1. *o essencial na linguística:* O único objetivo razoável da ecolinguística é o progresso na linguística. Eu não consigo ver que isso esteja sendo decididamente a linha geral de investigação. Frequentemente esse não é o caso, em absoluto.
2. *o essencial na ecologia:* O estado real da teoria ecológica precisa ser tido como um padrão. Ele se ampliou a partir de suas bases biológicas, mas não na ecolinguística atual.
3. *o essencial na política:* O fato de a ecolinguística fazer uma transição do pensar para o agir como único problema acadêmico é uma posição demasiadamente estreita. O papel da sociedade civil é essencial.
4. *o essencial na ciência:* A situação da terra requer uma mudança científica fundamental; a maioria dos ecolinguistas não reflete o meta-nível suficientemente. Para mim, esse é o erro central.
5. *o essencial na linguagem:* Há um fosso imenso entre o cultivo da diversidade linguística e a prática do “Somente o inglês” vista na ecolinguística de nossos dias. Eu acho que essa prática está errada.

Na minha opinião, as posições predominantes da ecolinguística atual sobre todos esses níveis estão erradas. E elas interagem. Na minha conferência eu comentarei todos eles, enfatizando as interconexões. Para mim, trata-se de uma importante questão de racionalidade. Toda boa ciência deve refletir a interconectividade de objeto-níveis e meta-níveis. Não pode haver nenhuma avaliação racional de uma questão individual sem uma disposição constante para alternar entre esses níveis.

Para entender minha posição, aqui estão algumas informações autobiográficas prévias: estudo de filosofia da linguagem e da ciência em Göttingen, Heidelberg e Oxford; primeira tese ecolinguística em inglês (*Nonempirical Linguistics* 'Linguística não empírica', incompleta, 1967/1968, em Oxford); encontro com P. F. Strawson e N. Chomsky. Doença durante alguns anos, sendo as publicações seguintes em alemão. Nova tese em Göttingen em 1976 sobre a teoria da

ciência, incluindo o capítulo "Talking in the New Paradigm"). Livre-Docência (*Habilitation*) em 1979, em Bielefeld. Titular (*chair*) em teoria da ciência em Bielefeld, a partir de 1982. A Teoria Ecolinguística dos Sistemas-Língua-Mundo a partir de 1982 leva à fundação da Escola de Bielefeld. Desapontado com muitos desenvolvimentos ecolinguísticos, a prática do "Somente Inglês" da ciência institucionalizada e a piora da situação da terra, de 2000 em diante eu mudei o foco principal de meu trabalho para a crítica e a política da ciência. Aposentei-me voluntariamente em 2005 devido a uma séria crítica à política da ciência alemã.

Palavras-chave: Ecologia. Teoria da ciência. Ecolinguística. Erros científicos.

Abstract: Present day ecolinguistics is polyphonic, but nevertheless there are five major essentials more or less shared by many scholars which I think to be wrong. My opinion is the following:

1. *linguistics essential:* The only reasonable aim of ecolinguistics is a progress in linguistics. I don't see this being decidedly the overall guideline. Often it is definitely not the case.
2. *ecology essential:* The actual state of ecological theory has to be taken as a yardstick. It has definitely widened from its biological beginnings but not in current ecolinguistics.
3. *politics essential:* Ecolinguistics taking transition from thinking to acting as an academic problem only is much too narrow an approach. The role of civil society is essential.
4. *science essential:* The state of the earth enforces a fundamental scientific change, most ecolinguists do not reflect the meta-level sufficiently; for me this is the central error.
5. *language essential:* There is a marked gap between the praise of language diversity and the "English only"-practice in present-day ecolinguistics. I think this practice to be wrong.

In my view, the prevailing positions of present-day ecolinguists on all of these levels are errors. And they interact. In my lecture I shall comment on all of them emphasizing these interconnections. For me, this is an important question of rationality. All good science must reflect the interconnectiveness of object- and metalevels. There can be no rational account of a single scientific issue without a constant disposition and readiness to switch between these levels.

To understand my position, here is some autobiographical background information: Studying philosophy of language and science in Göttingen, Heidelberg and Oxford; first ecolinguistic thesis in English ("Nonempirical Linguistics", uncompleted, 1967/68 in Oxford), meeting P. F. Strawson and N. Chomsky. Illness for some years, the following publications in German. New thesis in Göttingen 1976 on the theory of science including chapter "Talking in the New Paradigm". Habilitation 1979 Bielefeld. Chair on the theory of science Bielefeld, from 1982. Ecolinguistic Theory of Language-World-Systems 1982 ff leads to foundation of the Bielefeld school. Disappointed by many actual ecolinguistic developments, the "English only"-practice of institutionalized science and the worsening situation of the earth, from 2000 onwards I changed the main focus of my work to the critique and policy of science. Retired voluntarily 2005 because of serious critique of the German policy of science.

Key words: Ecology. Theory of Science. Ecolinguistics. Scientific errors.

A short autobiographical background

Born in Göttingen 1942, my first ecolinguistic ideas that I discussed with my philosophical teacher Günther Patzig and my linguist-friend Siegfried Kanngießer go back to the early sixties but remained unpublished (1). When, invited by the philosopher of mind Gilbert Ryle, I went as a registered student of philosophy to Oxford in 1967 affiliated to St. Catherine's College, I started a thesis titled "Nonempirical Linguistics" supervised by P.F. Strawson (2). However, it was stopped by illness for a several years break, but my notes survived. In between I attended the famous Oxford-lectures on linguistics and politics by Noam Chomsky in 1972. Back in Germany I fully concentrated on the

philosophy of science and executed a first sketch of ecolinguistic theory as part of my 1976 Göttingen doctoral thesis published in 1979; see chapter "Talking in the New Paradigm" (3). The main first explicit step was 1982 (after having been appointed professor of the theory of science in Bielefeld) my explicitly ecologically based theory of language-world-systems (4) which was the starting point for what has come to known as the "Bielefeld school", followed by a series of books and articles, written by pupils, colleagues and myself (e.g. 7, 8, 10, 11 and others). My main next step was the development in the eighties and nineties of what has been called "Evolutionary Cultural Ecology", a new theory of culture placing the problems within the framework of evolution (6, 7, 8, 15, 20, 26). About the turn of the century my interest in linguistics declined because I was increasingly disappointed by the current emotionally driven ecolinguistic fashions. 2005 I retired from my chair of my own free will two years before the normal date because of my critique of the German policy of science. Facing the dramatic state of the earth my interests concentrated on the responsibility of modern science (especially economics) for such results (17, 19, 22, 23, 35). At the same time, the important change in the role of scientifically active laymen and amateurs became apparent to me, culminating in my book on Citizen Science 2014 (19). For some years I was heavily engaged in leading positions in nature conservancy and scientific reform, primarily economics. A faint hope remains up to the present that in future a fully rational mode of ecolinguistics could play a major part in saving our planet (24, 25).

0. Some preliminary remarks

I start with a definition of the subject as I like it: *Ecolinguistics is a scientific conception of linguistics that reveals the ecosystemic structure and function of the human languages within the framework of transdisciplinary science. And to continue: It explains languages as having evolutionarily developed from older natural ecosystems in the course of the emerging cognitive basics for the complex use of symbols within the new cultural purposes of man.*

My view on ecolinguistics is that of a critical researcher on science, working mainly in the neighbourhood of linguistics, cultural theory and economics but having learned many things from nature and the natural sciences. In the course of half a century, my convictions have changed on many details but they have proven stabile on most of the principles. With one exception (the paradigm-issue) the changes are neglected in this interim assessment. It concentrates on the principles.

Today's ecolinguistics is a polyphonic reservoir of different positions, but nevertheless there is a tendency to form a paradigm. In my view, this is not well-based, however. Many of these endeavours lack a rational discussion of essential aspects of its general framework. In this theoretical overview I shall reduce them to five levels: 1. the linguistic, 2. the ecological, 3. the scientific, 4. the political and 5. the language essentials. For these reasons, in the last years I have partially turned away from ecolinguistics and payed attention to the more urgent issues of the necessary changes in science for saving the earth (14, 23, 35).

My exposition in this text is decidedly theoretical. If there is anything missing which is of major importance to science it is mainly the empirical factor. But there is a reason to leave that out: The more people concentrate on empirical research, the more the lack of a proper theoretical base is concealed. The empirical work appears to confirm a theoretical base by focusing on concrete facts, but the theoretical framework could nevertheless be faulty or at least deficient (3). This does not at all mean that I do not respect empirical science in general or facts in particular. Empirical work is obviously of major importance in achieving knowledge of the details. But the details may not blur the principles; often they do however. Therefore I leave them out. This is an important point since a major part of contemporary ecolinguistics consists of empirical research or concentrates mainly on an empirical focus. This is nothing to be criticized, but often the theoretical base of this endeavours is.

In a certain way, each of my five categories of essentials express the same thought from five different perspectives: that there is a hidden level of common rationality in all natural languages, their ecosystemic structure. Hence all of the five essentials are of importance for me but obviously

not equally weighty to other ecolinguists. Some will probably pick out those which are and neglect those they take to be irrelevant for them. In my view that would be a mistake. So my presentation may appear dogmatic, but it is not meant that way. I encourage anybody to propose against it with good arguments. But notice, that picking out single points confirms my critique of present-day science: to follow the diverging paths of the specialists instead of pursuing the complex connectedness of the problems. This connectedness is hidden to the specialists who have been trained to more and more narrow in their awareness, at the expense of gaining a greater exactness of parts of the problems (22, 23).

Becoming aware of the many real connections is a central achievement of ecology, which explains why ecological thinking has advanced quite a few sciences considerably during the past decades (14). Accordingly it is comprehensible that this could apply to linguistics too. In today's state however, I miss the open exchange of arguments between the different scientific levels, with other linguistic schools, other sciences and the civil society as a whole. Present day ecolinguistics reminds me rather of a religious sect than of openminded partners in a comprehensive discussion (17). Similarly, I admit, this could be the case with many other specialists of all single sciences. But the problems will force all of us to look over the edges of our plates.

1. Linguistics

Starting with the perspective of linguistics, a typical science of the twentieth century (3), there are two major questions. One asks for the contribution of ecolinguistics to linguistics. Ecolinguistics could be a thematical field only which is more or less neglected by colleagues differently specialized, or it could be an alternative, a new conception of linguistics in general. For me, only the latter position is a reasonable one. Why? Because scientific innovations are never completely restricted to the discovery of thematic fields only; they are always more or less accompanied or followed by methodical or theoretical changes. Take linguistics: The observation applies to mathematical linguistics, communicative linguistics, cognitive linguistics, sociolinguistics, psycholinguistics, biolinguistics to name only the most prominent examples.

But then we must answer the second question: How does ecolinguistics relate to the language system and to grammar? This question is of outstanding importance since it is the ecological perspective that offers the most innovative paths for our understanding of just these aspects of language (4, 8, 9). There are three major figures whose thinking has advanced the subject during the past 200 years by three major ideas. First Humboldt, the nearest to ecolinguistics, and his idea was to understand languages as revealing possible but different views on our rationality and keys of our ways for perceiving the world. Second Saussure, one of the founders of systems thinking, the father of the idea to separate the use of language from what since then has been called its system. And third Chomsky with investigating into the creativity of language and distinguishing cognitive structures hidden behind those governing the languages in openly visible a way. Ecolinguistics could bind all these ideas together into one: that by the course of evolution the linguistic diversity was organized by a cognitive ecosystemic organization of the natural languages.

Therefore, the underlying systemic aspects of language today are more precisely categorized as being ecosystemic (4, 8). A grammar seen through ecolinguistic spectacles is something like a navigation system of rules with different binding forces through the individual selection of phonemes, morphemes, sentences and meanings made by a special language-world-system (9, 12). The cognitive ecosystemic structure hidden by rather different surfaces is itself a set of rules enabling us to express, to understand and to renew our linguistic comprehension of the world in many rational ways. They are not arbitrary, however, but governed by the necessity to allow

specific language solutions for the ecosystemics of a peculiar language-world-pair (12). A theory of language therefore is a theory of a language-world-pairing.

The evolutionary development of these pairs not only allows to include the level of the language system into ecolinguistics but also to integrate our knowledge of the formation of language into our knowledge of the course of evolution (6, 8, 10). Especially the evolutionary power of the ecological ideas is nearly completely overlooked by many scholars.

2. Ecology

In consequence, the second perspective has to be that of ecology and evolution. Ecolinguistics must adopt a position not only with respect to current linguistics, but to current ecology, too (14). Again, a rational scientific discussion is the only acceptable level for me. It is necessary to emphasize this because of the fact that presently the meaning of ecology is often blurred by emotions. In my view many ecolinguists gain access to their subject by emotional paths. Certainly, there is an emotional aspect involved; I have myself put that into notice from the very beginning (4). But it may not prevent us from perceiving the rational aspects of the problem. Concentrating on rationality, one has to notice that ecology started as a scientific discipline of systems thinking in biology with physics as an indispensable framework of reference for quantitative measuring (5). But these biological systems themselves are an intermediate result of evolution (6, 8). It would be mistaken to refer to them only; some ecolinguists do, however.

There was a remarkable further development of ecology, and this is widely (although not fully, fortunately) ignored by many ecolinguists (and misinterpreted by some conservative biologists, too). Today, even the older “ecology of matter“ has exceeded the borders of natural science towards the newer „ecology of mind“. Quantum physics opened even this central natural science for the immaterial world. And partly the evolutionarily growing powers of the immaterial have changed biology already by approaching it to psychology (5). The physical energy of the sun is transformed to physiological energy of all living beings, and into psychological energy of higher animals and man (37). With respect to language, this is the adequate ecological framework today. To ignore it will dwarf the ecolinguistic idea from the very beginning (6). The ecology of mind has been shaped by several outstanding scientists in the course of the twentieth century (14). An early proponent of this thinking was the German-Swedish biologist Jacob von Uexküll, a late companion in philosophy (among some others) Norwegian Arne Naess, but the central figure was without doubt the transdisciplinary American researcher Gregory Bateson. In my view he belongs to the central personalities of modern science. “Ecology of mind” is by no means a metaphor, as which it is erroneously often taken, but one of the outstanding discoveries made in the past century. It is essential for ecolinguistics (21).

The structure of a physical ecosystem is a rational circular economy of using the energy of the sun for producing, consuming and reducing matter by the interaction of specialized groups of organisms. In the ongoing evolution a psychological level emerged that in principle used the same economy for, at first, cognitive aims and, secondly, communicative aims. The result were many highly specialized groups of animals with highly specialized cognitive and communicative means (5). This development was tightly bound to the development of a nervous system and the brain. Man is a late outcome from this, as is language. But language is not only characterized by the new but also by the old structures formerly developed but still existing (18). This lasting conservatism especially secures the basic rationality of the ecosystemic economy.

Pursuing these ideas resulted for me in a new theory of culture, since younger culture is an evolutionary inheritor of the achievements of the older natural evolution (6, 7, 8, 21). This new theory has been called “Evolutionary Cultural Ecology” and is an advanced extension of Bateson’s

ecology of mind. A recent American anthology (Arnold 2014) on “major figures and contemporary developments” singled it out as one of the leading theories in the tradition of modern systems theory (26). It is doubtlessly bearing on ecolinguistic theory since it enables us to understand the evolution of language itself as a complex intermediate step on that way (15, 16). Evolution is always mainly conservative; structures that have stood the test in many thousands of years and proved to be useful are normally retained for very long periods. They are used again and again in new living beings and only slightly changed or being recycled for new use in other systems. Some of these systems were symbolic systems and this afforded some major changes (for instance from what we commonly call natural “laws” to cultural “rules”, but even this did not force evolution to abandon the approved ecosystemic pattern (16). Consequently, it is no wonder that the rationality of the ecosystemic economy is to be found in the languages too. It is a pity that this is not realized by some ecolinguists who consequently miss the deep evolutionary foundations of their visions.

3. Science

As a philosopher of science, this third level is the central one for me (14, 25, 37). If we consider our problems in the context of our contemporary situation, we have to start from the most advanced ideas on the essence and performance of science. For solving our problems with rational means, we have invented science. But the history of science tells us of many changes in its understanding and practise. In the past four centuries, many sciences have been heavily involved in shaping the alarming present states of the earth, with economical and technical sciences as forerunners but not excluding the social and cultural ones and surely including linguistics, too. A guiding figure with a lasting impact was the English philosopher Francis Bacon by his epochal work “*Novum Organum*” (1620). It was the beginning of a turn in the scientific culture that we follow up to the present day, often called “science of the modern times” (9, 23). As well-behaved pupils we still obey the advice of our teacher Bacon to divide everything into its smallest parts without thinking of what could be lost by that directive. So, science became “the sciences” and wholes were cut into parts. As a reward the teacher promised us “knowledge and happiness” and at least in the western world he seems to be confirmed. But in his focus was only mankind and not our fellow living beings. His awareness was confined to what we today call western civilization and excluding the rest of the world’s cultures. If we see the earth’s present state, Bacon’s program was not only a success. Indeed, presently Baconian science fails in front of our eyes (24, 25, 37). The scientific culture we have does not favour the well-being of our planet, as it prioritises ongoing specialization on details of knowledge and neglects many hidden connexions (23). Therefore, especially philosophy of science has to react. It must formulate ways to a rebirth of a culture of science that will be able to save our planet instead of furthering its problems. In other words: We all witness the failing of the present day science in witnessing the growing problems it has afflicted to the earth and her inhabitants, a considerable part of mankind and a still more considerable part of our fellow living beings. This is the first duty of today’s philosophy of science and a rational and rewarding ecolinguistics needs to pass this keyhole. But I am sceptic whether many calling themselves adherents to the sect see that consequence in its full meaning: changing the culture of science (29, 32).

There is another scientific problem which is often overlooked. Against a widespread prejudice, science is not necessarily bound to institutions, formal studies and a profession. In fact, there is quite a lot of diverse non-professional research activity spread over the whole of the civil society which is not paid for and mostly not as specialized and certainly not as well-equipped as the institutional forms. But a living rationality is a question of being ready to learn and adopt other perspectives freely if opening new paths. It is better performed outside of the strict organization

modes of the big institutions for it needs free space for searching new paths (22). It is not a question of good or bad quality; that is to be found in both realms, that of the layman and that of the professional. Mistakes of the latter are by far the more dangerous (23). Many variants of this amateur based research are more or less aware of the necessity for a holistic perspective and a critical position with respect to today's institutionalized sciences. The free research of amateurs contributes markedly to the opening of paths to a new transdisciplinary re-institutionalization of science.

Transdisciplinarity is not only a new wording for interdisciplinarity (24, 37). The latter joins separate but neighbouring disciplines, whereas transdisciplinary science tries to end the age of believing in never-ending specialization as the only way of gaining real progress of knowledge. Instead of hailing ongoing competition, non-Baconian science will put cooperation in front of the main values for scientific progress. This is not identical with finishing specialization in general or an end of the disciplines, but rather it is a realisation of the limits of our hitherto scientific institutions. For saving the earth and gaining the future, we are less in need of the specialist's *venia legendi* and more in need of new scientists with a lively *venia discendi*. For them, learning to see things from as many aspects as possible is a proof of their scientific ripeness in a transdisciplinary research group. In such a group every member tries to learn from the other members but at the same time offers his special competence to enrich the common consciousness of the factual complexity.

And Baconian science has a problem with reality. It is too complex for it (23). The first step in present-day professional research is to establish a model of the sector of reality the specialist is dealing with. Usual linguistics is a fine role model of Baconian science; ecolinguistics could end this. But will it? Quite early in studying a special subject we are told that there is no other way. Today, we are surrounded by a world of models instead of reality. A growing number of scientists sees the deficits of this scientific culture and subscribe to the necessity of a fundamental change to transdisciplinary research. But most of them underrate the meaning of the factual structures of the institutions they work in. It is nearly impossible to follow a transdisciplinary agenda within an institutional framework which at most is open for interdisciplinarity. Therefore, we need new institutions, especially the Transdisciplinary University (24, 25). There is no single one at present but there are many preliminary steps and serious attempts. To establish the new institutions is in my view the most urgent and most difficult intermediate aim in the course of replacing the Baconian culture of science by the new one we need. How much time do we have left for this? About a hundred years, maybe less, maybe some more, is a rough estimate. Quite a few scientists argue in that direction if the carrying capacity of the earth is taken as a measure. Seeing the growing gap between the poor and the rich and the extinction of our fellow living beings, one could say: The sooner, the better.

Linguistics must and will find its role in this new setting, and ecolinguistics should have a good front place in it. It even could perform as a pacemaker towards such new goals (24).

4. Politics

Every science is political. There is not only a scientific interest in knowledge but fundamentally in change, too. Questions, wishes and needs existing in a society play an important role for science. In this respect present day institutionalized science lacks a massive deficit of democratic awareness and self-organization. This is paralleled by the extent to which many serious scientific endeavours taking place in the middle of the civil society are belittled or even ignored by professional science at the universities. An example is the citizen science debate (19) which is marred by economic and bureaucratic preconceptions (23). If ecolinguistics wants to become much more efficient with

people, it has to work much more deliberately and purposeful in both directions: the professional scientists working in the closed rooms of their institutions and the open surrounding environment of the civil society. The potential is given, no doubt.

In the meantime we have been trained by sociologists to speak of different systems co-existent in a society (science, economy, politics, sport, media, etc.) but there are many overlapping areas. The distinction of these systems is not as neatly cut as it is in Luhmann's theory (23). Science for instance is to be found at many places outside of the professional institutions, for instance in the diverse interests of many people. However, from the perspective of the professionals, these people appear as laymen or amateurs with the deficient competencies. But civil society has a much more fundamental meaning to science than is commonly realized by the professionals. Even in democratic communities they often try to impede its influence on their own closed worlds although the citizens of civil society define the general goods and non-restricted problems by knowledge from the open experience in their own life. This again is a consequence of our Baconian culture of science which dissects the connexions instead of throwing a special light on them. Again, acknowledging these perspectives could take ecolinguistics to new frontiers.

Unfortunately, the understanding of amateur- and lay-science is limited and associated with a backward viewpoint compared to that of the institutionalized professional forms taken to represent "true" science. An example is the often ill-advised treatment of what has been called "citizen science" in the professional world and their administrative institutions. Biologists were the first scientists to realize a deficit of their subject in the nineteenth and especially twentieth century: to underrate the possibility of losing significant parts of the evolutionarily grown biodiversity and – as specialists – being in obligation to fight against the causes. Very lately they try today to engage in it and as Baconians commit a new mistake: taking themselves as the representatives of "true science" and the amateurs as cordially invited "citizens" (not: scientists!) helping them without charge and (fortunately!) no need of funding. Often, this form of citizen science light is the standard form which is propagated today: an ill-advised late outcome of the Baconian view on science (23). Professionals may normally be trained to avoid the mistakes of the laymen, but their mistakes are the much more serious and longer-lasting ones. However, they enjoy a sort of protection space erected by their professionalism. Science that isolates herself like this is fundamentally blind for realizing the present situation of the earth and her inhabitants, both human and non-human. This holds for each discipline and is an unerring measure for orientation between wishes and reality. If ecolinguists intend to being guided by this scale, it is indispensable for them to follow that compass of civil society for the future of science.

I do not see many indications that this awareness of the political grounding of their agenda is really developed in ecolinguistics. Most stay in the closed Baconian rooms of the language-part of the language-world-pairings, and do hardly widen the view to realize the world-part that is exemplified by the state of the earth. And if they do, the lament about the mistaken ways of talking about nature, plants, animals, or humans often remains the only step in that direction (30). But this is not the full contribution that a linguistics guided by ecological ideas should and could deliver. It is driven by emotional reasons more than rational, but there is nevertheless a tendency to draw guiding lines for the political correctness of our talking ("Greenspeak"). This is too weak a conception than striving at a visionary contribution of experts on language that we need for securing the present state of the earth not being the last of the richness of its living.

Nevertheless many ecolinguists strive at creating a paradigm (27, 28, 30, 34). One should mind, however, that there is no common understanding of truth but a common conviction that it cannot be decided upon by voting according to the principle of majority. At the contrary, a scientific paradigm comes into its role just this way, however; this is one of the many contradictions of the

Baconian present-day institutional science. If the majority of a professional scientific community believes in an opinion, it gains a paradigmatic function. There is no such thing in the non-institutional science of free research. We should take this as a guideline to abandon the concept of a paradigm altogether (14, 17, 25).

5. Language

Language is a biologically founded competence of the genus *Homo*. But there is not *the* language just as there is not *the* bird or *the* living being; there are only languages or birds or living beings in thousands of variants. The so-called natural languages are accompanied by a growing number of constructed languages that serve specialized aims. There is no language ideally suited to scientific purposes. All linguists believe in these insights, and yet many people in fact take some of the languages as being more important than others. In an ecolinguistic context, this mistake could become a severe fallacy.

The linguistic diversity is widespread and entails a broad variety of ways of thinking and looking at the world. The so-called natural languages are in fact to a major extent cultural and the linguists unanimously take them not to be fully translatable into one another. It is equally wrong to categorize them in those which allow rational discourse and those which do not or even to view this diversity as an obstacle for gaining knowledge. A better perspective evaluates this diversity as a rich source for exploring our rationality that obviously wears most different linguistic and cultural dresses which open different paths to different parts of our rationality. This is not the same as speaking of different rationalities; I am no relativist in the usual sense of the word (25). There is one rationality, but the different languages make different parts of it accessible. In this respect ecolinguistics could be the most modern and sustainable advocates for a global and democratic future by opening this treasure chest and drop any prejudices on language-limitation. Expressing a thought ranges first. An „English-only“-position is utterly incompatible with that. This applies not only to research and publications or teaching and learning but to international congresses, too. Praising theoretically linguistic diversity on the one hand, mourning manmade losses, but selecting English practically without any discussion of the consequences as the only language for science is incompatible with each other (24). This applies to all sciences, surely to linguistics and is contradictory for ecolinguistics. One of the consequences of this mistake is the fact that scientific work that has been carried out in other language will no longer be known and cited. Science will become faster this way but worse at the same time. A huge source of possible solutions for the earth's problems will disappear in a deep hole of the disallowed and neglected. But the earth cannot wait for this suicide of the Baconian age of science by exaggerating its false economy: We soon need solutions.

Viewing the problem as one of international communication is misleading; it is in the first run one of cognition (11). If any fields of activity are in need of taking the different world-views offered by the different languages serious, it's science in general and linguistics and economics in particular. Any post-Baconian science has to allow scientific work in every language that might support pieces of our rationality that otherwise would be lost. It is cognitive linguistics that by using new methods of empirical research in the relations of language and the brain has advanced linguistics during the last past decades more than any other school (5). It was able to display to us the processes and variants of thinking that make language-world-pairs diverse and constant learning important. The new science of the post-Baconian age learns from thinking in German and Russian as well as in Chinese or Japanese or in Xhosa or Suquamish. We cannot afford important parts of our rationality that we need for post-Baconian science being concealed by monolingualism; we need Mandela's humanity grown in Xhosa and Big Chief Seattle's economy

grown in Suquamish, to name only two examples intelligible to many people who have become prey of the internet driven run to efficiency, acceleration and the paltriness of monetary culture that dominates our globalization. We learn this from ecolinguistics!

And rationality can equally not be bound to the actual commercial modes of the internet. The web's rationality is infested by the values of speed, easiness of comprehension and money, too. The web is a guiding force of these putting communication first on the modern agenda. Doubtlessly, besides cognition we have problems of communication, too. I do not oppose against practical solutions by the help of widely used languages, especially for the oral language use. But we must remember that this is a sort of artificial limb, a prosthesis, restricting the access to the world to standards that are selected by political developments. Monolingualism is wrong if we want to learn of our mistakes. Invitations to scientific discourse must be free of linguistic obstacles. It is a joke that so-called "open access" forms of science erect just those ("your manuscript should be in English"). Full science is not the entrance gate to a monolingual world; it would be a world of limited rationality and that does no longer admit a free science. Future science must become less superficial by learning to deal with the hidden complex connexions. I tell this in English because I feel forced to do so and although I am sure of the superficiality of my expressions. The good amateurs everywhere always speak the language they know best – a further reason to open professional science towards the needs of the civil societies.

Final remarks

I like to end this short sketch of my view on ecolinguistics by saying that in this short account I did not intend to look into the details of the different conceptions presently discussed. I wanted to give an overview about the main essentials that have to be taken into consideration as I see them. Generally, this view is neither restricted to ecolinguistics only nor to the theoretical level in general. Rationality and scientific progress always require frequent switching to neighbourhoods and metalevels. But both are proud words: rationality and scientific progress. Many people cannot stand the constant talk of scientific rationality and progress any longer while at the same time seeing the states of the earth and present day science. In consequence, if we pursue the rational path nevertheless, we have to widen our views, to recognize our mistakes, end our wrong ways and to learn wherever we can, on any subject involved. And they are all involved. We have no alternative to rationality and no rational alternative to a transdisciplinary setting. But getting science on the rational way does not mean to remain at the places we have reached so far, but to think everything anew that has a bearing on our conceptions. In the case of present day science it means that we have to change the direction, radically and as soon as possible.

There are ecolinguists partly near to single positions in my list of essentials – for instance Honorio do Couto with respect to systems thinking, Mufwene partially with respect to evolution, BastardasBoada with respect to some aspects of grammar, Mühlhäusler with respect to the meaning of empirical studies (which I left out here), Steffensen with respect to a philosophical grounding, Fill with respect to transdisciplinarity (to name some of them only) – but no one of them tells the whole story. Quite a few ecolinguists try to strengthen the systemic aspects of language in this context, for they differ markedly from the early approaches, now being recognized as ecosystemic. Some without doubt see the big linguistic prospects by an ecology that has opened the immaterial world for ecological thinking. Others at least feel the breakdown of the Baconian culture of science, which is mirrored by similar breakdown on ecosystems around the earth. Some even participate actively in the acceleration of these processes and the learning of researching complex hidden connexions by exploring paths of new institutionalizations (above all the transdisciplinary university). Additionally, there are ecolinguists aware of the needs and role of

the civil society seeking a stronger impact on professional science. A few will even part my critique on the political dominance of English not being the ideal language for science from quite similar reasons that have finished its Latin-dominated age. To all of them I pay my respect although I will concentrate my remaining powers to the more fundamental aspects.

A last remark: I welcome scientists drawing different consequences from the facts as they see it. But there are many misunderstandings, too. Some could happen because of changes in my own thinking. An example is my later rejection of Kuhn's concept of a paradigm that I formerly have approved myself. My present position has been criticized as inconsequent; I would myself try to establish a paradigm, the critics say. But that is not the case. I admit that I changed my position in this respect completely. Formerly I took a paradigm according to Kuhn's impressive popularity as a legitimate goal of science (see my "Talking in the new paradigm", 1979; (3). Nowadays, I look at it with other eyes: Science always argues for sets of hypotheses seeking truth and may never claim to possess it. If you claim possession of truth (for instance by following the opinions of a majority) you confuse science with politics. There is an "amphibic" area of transition between science and politics (just as the riparian edges of a natural lake or river) but that does not mean that the two are the same (water and land). Truth is an important concept of science, but it marks a goal, not a possession. The opinions of others are sometimes relevant but they are no indication of truth. Even a majority of fellow-scientists of the same subject do not decide about truth, they merely decide on influence and power. Kuhn's acceptance of these parameters as governing the directions of factual scientific research is one of the fundamental mistakes of the late Baconian age of science that we have to stop as soon as possible.

The leading spirit of the five essentials I have proposed here was nothing else than intense arguing for rational opinions on language by trying to abolish the limitation in our apprehension of present reality. It is time to realize that Baconian science has caused heavily to the dangers for our planet to remain a good place for living. We have produced enough oversimplified models, now it's time for a better approach to reality. At the end of the Baconian Age each subject has to draw the consequences. Ecolinguistics could accelerate the pace in the direction of a new culture of science and a better future of the earth by adopting these essentials. We need this acceleration of the change since tomorrow's science will have to be slower than past and present.

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